

## REMARKS

Claims 1, 3-6, 8-10, 13 and 14 are pending in this application.

On page 2 of the 06/17/2004 Office Communication, the Examiner states that "Claims 1, 3-6, 8-10, 13 and 14 are rejected under 35 USC 102(a and b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Maloney '200B1, Worrell '214, Mase '394 or Kondo '330." This statement alone does not make it clear which claims are rejected under which section of the Rules in light of which prior art reference.

The Examiner provides additional clarification of the rejections on pages 2 and 3 of the Office Communication, where he has provided explanations of anticipation rejections under 35 USC 102 for each of the four prior art references, although no specific claim limitations are discussed in light of the prior art. The Examiner has also provided an explanation of an obviousness rejection under 35 USC 103(b) based upon the Kondo reference, although the Examiner's reference to "overlapping ranges of amounts" does not seem to apply to all of the pending claims, and no specific claim limitations are discussed in light of the Kondo reference. The Examiner then proceeds to address the applicant's previous arguments on pages 4-6 of the Office Communication.

Accordingly, it is the applicant's understanding from the above interpretation of the Examiner's statements that claims 1, 3-6, 8-10, 13 and 14 are each rejected under 35 USC 102 in view of each of the four cited references; and further that claims 1, 3-6, 8-10, 13 and 14 are rejected under 35 USC 103(b) in view of Kondo.

Claims 13 and 14 are amended herein to correct their dependency.

Turing now to the rejections under 35 USC 102 in view of Maloney, the applicant notes that Maloney never discusses any composition of gadolinia-hafnia. Thus, Maloney fails to support the rejection of claims 10, 13 and 14 under 35 USC 102, and this rejection should be withdrawn.

With regard to the rejection of claims 1, 3-6, 8 and 9 under 35 USC 102 in view of Maloney, the applicant notes that Maloney describes a gadolinia-zirconia

oxide containing 5-60 mole % gadolinia. In column 10, lines 17-19, Maloney suggests that "zirconia or gadolinia can be partially substituted with yttria, up to about 25 mol. % and preferably only up to about 20 mol. %." Because Maloney suggests only a partial substitution of zirconia or gadolinia, the resulting composition would include zirconia, gadolinia and yttria - a three-oxide composition. Thus, the two-oxide example of 75 mol. % zirconia and 25 mol. % yttria relied upon by the Examiner in page 4 of the Office Communication is a composition that is not taught or suggested by Maloney and it can not provide support for the rejection under 35 USC 102. While Maloney does suggest the partial substitution of zirconia or gadolinia with yttria, he provides no specific examples of such a three-oxide composition, so one skilled in the art is not taught any composition that anticipates the present claims.

Furthermore, Maloney does not teach or suggest that his three-oxide composition satisfies the presently claimed limitations regarding ionic conductivity (claims 1, 3, 4, 6, 8 and 9) or resistance to sintering (claim 5). The applicant hereby reserves the right to provide evidence that these claims limitations are not met by the compositions of Maloney, although such evidence is premature because the Examiner has failed to address these limitations or to provide a *prima facie* case for anticipation of these limitations. Thus, Maloney does not support the rejection of claims 1, 3-6, 8 and 9 under 35 USC 102, and this rejection should be withdrawn.

Turing now to the rejections under 35 USC 102 in view of Worrell, the applicant notes that Worrell never discusses any composition of gadolinia-hafnia. Thus, Worrell fails to support the rejection of claims 10, 13 and 14 under 35 USC 102, and this rejection should be withdrawn.

With regard to the rejection of claims 1, 3-6, 8 and 9 under 35 USC 102 in view of Worrell, the applicant notes that the range of compositions taught by Worrell include a three or four oxide composition including an oxide of a metal of Group Va or Vla of the Periodic System of Elements and/or titanium dioxide. The applicant argues that the "consisting essentially of" language of the claims makes the claimed invention different than the three or four oxide composition of

Worrell. The Examiner's states that the applicant has the burden of showing that the introduction of these extra components would materially change the characteristics of the applicant's composition, and the applicant hereby reserves the right to provide such evidence via a separate paper. However, such evidence is premature because the Examiner has failed to establish a *prima facie* case that Worrell anticipates any of claims 1, 3-6, or 8 and 9. In particular, the specific examples of embodiments that are taught in Worrell fail to anticipate the concentration of stabilizers that are delineated in the present claims. The general wide ranges of mole percentages that are expressed by Worrell are not a sufficient teaching to support a rejection under 35 USC 102, since the Examiner has not identified a workable material from these broad ranges that anticipates the weight percentages of the claimed materials. The only operable embodiments that are taught by Worrell are the specific embodiments that he describes in his examples, and these do not anticipate the present claims because they all contain relatively low concentrations of stabilizers.

Furthermore, Worrell provides no teaching that the ionic conductivity of his three or four constituent compositions satisfy the presently claimed limitations regarding ionic conductivity (claims 1, 3, 4, 6, 8 and 9) or resistance to sintering (claim 5). The Examiner has failed to provide any *prima facie* case for anticipation of these limitations and Worrell provides no support for such a case. Thus, the applicant bears no burden of proof until the Examiner has established anticipation, although the applicant reserves the right to provide such evidence in a separate paper. Accordingly, Worrell fails to support the rejection of claims 1, 3-6, 8-9 under 35 USC 102, and this rejection should be withdrawn.

With regard to the rejection of the claims under 35 USC 102 in view of Mase, the applicant notes that Mase describes a three-oxide composition wherein the amount of stabilizer in the three-oxide composition is 5-30 mole %. Even at the maximum value of 30 mole %, the equivalent weight percentage of stabilizer in these three-oxide compositions is less than the 30 weight percent of the present independent claims. Thus, Mase fails to anticipate any of the pending claims. Furthermore, there is no teaching in Mase or assertion by the

Examiner that the three-oxide compositions of Mase anticipate the presently claimed limitations regarding ionic conductivity (claims 1, 3, 4, 6, 8-10, 13 and 14) or resistance to sintering (claim 5). Thus, Mase fails to support the rejection of the claims under 35 USC 102, and this rejection should be withdrawn.

Turing now to the rejections under 35 USC 102 and 103 in view of Kondo, the applicant notes that Kondo never discusses or suggests any composition of gadolinia-hafnia. Thus, Kondo fails to support the rejection of claims 10, 13 and 14 under 35 USC 102 and 103, and these rejections should be withdrawn.

With regard to the rejection of claims 1, 3-6, 8 and 9 under 35 USC 102 and 103 in view of Kondo, the applicant notes that Kondo describes an ingot material that is used in a vapor deposition process to deposit a thermal barrier coating material. It is well known in the art that the composition of the ingot material will not be the same as the composition of the resulting thermal barrier coating, due to the differing partial pressures of the constituent materials in the composition. The applicant reserves the right to provide evidence that the thermal barrier coating material resulting from the vapor deposition of the ingot material of Kondo would not anticipate the claimed thermal barrier coating materials, however, such evidence is premature since the Examiner has failed to establish a *prima facie* case for anticipation or obviousness of the claimed thermal barrier coating materials in view of the ingot material of Kondo.

Furthermore, in column 3, lines 13-15, Kondo states that the concentration of stabilizer in the ingot may be from 0.1 to 40 weight percent, depending upon the particular purpose. However, all of the specific examples cited by Kondo contain a concentration of stabilizer that does not anticipate the claimed invention. Kondo is concerned about making an ingot material that will not break apart during electron beam heating. He does not teach or suggest any improvement in the art of the resulting thermal barrier coating. Kondo teaches only an improvement in the crystalline phase and porosity of the ingot rather than any improvement in the resulting coating composition. Thus, one must not interpret with hindsight a generalized statement in Kondo regarding theoretically possible stabilizer concentrations as teaching or suggesting to one skilled in the

art at the time of the present invention that non-traditional coating compositions are desired.

Also, there is no teaching in Kondo or assertion by the Examiner that the three-oxide compositions of Kondo anticipate or suggest the presently claimed limitations regarding ionic conductivity (claims 1, 3, 4, 6, 8-10, 13 and 14) or resistance to sintering (claim 5). Thus, Kondo fails to support the rejection of the claims under 35 USC 102 or 103, and these rejections should be withdrawn.

Furthermore, claims 4, 9 and 14 contain limitations of at least 50 weight percent stabilizer, which are not taught or suggested by Kondo.

Finally, claim 5 has been amended to change the claim language to "consisting of" rather than "consisting essentially of", thereby overcoming the rejections in view of Kondo since the claim now excludes the monoclinic and tetragonal phases. This amendment is in agreement with the observations by the Examiner on page 3 of the Office Communication.

Reconsideration of the application in light of the above Remarks and allowance of claims 1, 3-6, 8-10, 13 and 14 are respectfully requested.

Respectfully submitted,

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